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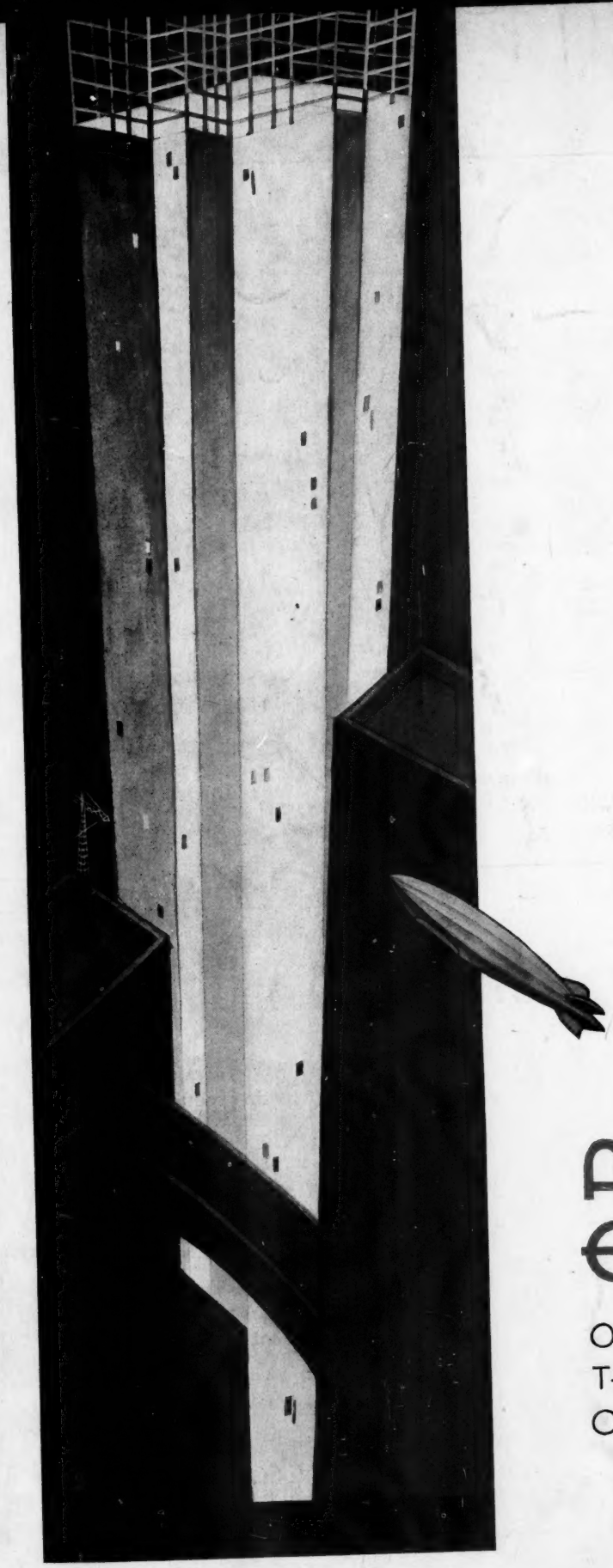

The AMERICAN ENGINEER

OFFICIAL PUBLICATION
THE NEW YORK STATE SOCIETY
OF PROFESSIONAL ENGINEERS

APRIL 1931

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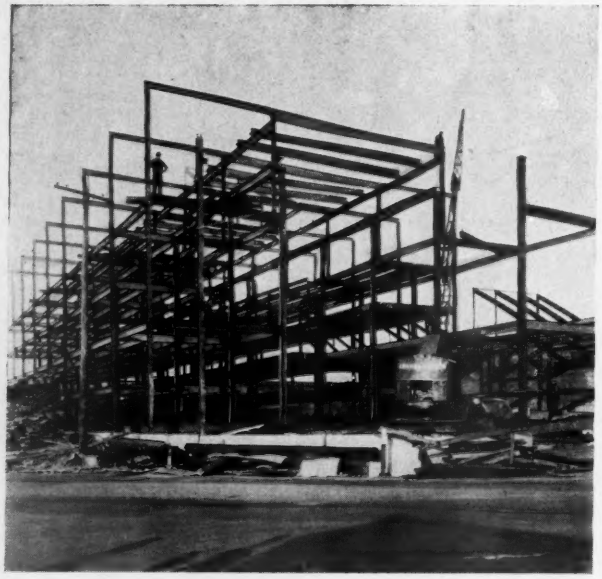

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OFFICIAL PUBLICATION
OF
THE NEW YORK STATE SOCIETY
OF PROFESSIONAL ENGINEERS
GRAND CENTRAL TERMINAL, NEW YORK, N. Y.

Publication Office, Saugerties, N. Y.
Editorial and Executive Offices, Grand Central Terminal Building, New York City
ROOM 2952

J. C. VIEWEG, PUBLISHER
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VOLUME I | APRIL 1931 | NUMBER 4

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Arthur V. Sheridan, Editor

Yearly Subscription: United States, Insular Possessions, Cuba, Canada, Central America, South America, and Spain, 50c; Foreign, $2.00; Single Copy, 10c.

Application for entry as second class matter at Saugerties, N. Y., pending.

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THE AMERICAN ENGINEER

Published Monthly for

THE NEW YORK STATE SOCIETY
OF PROFESSIONAL ENGINEERS

ROOM 2952, GRAND CENTRAL TERMINAL BUILDING

NUMBER 4 NEW YORK CITY APRIL, 1931

A UNITED PROFESSION

Results of Legislative Campaign

To some persons the successful passage of the amended section of the Engineers' License Law and the elimination of the discriminatory feature of the Multiple Dwelling Act constitute the Alpha and Omega of the accomplishments of the Society during the official year now drawing to a close.

There are, however, indications of the early consummation of other objectives equally important to the future of the calling.

Engineering as a profession resembles a giant of unlimited physical and mental potentiality, who, indifferent to the necessity for co-ordination of both, is content to ignore signs and conditions until actually attacked. Even then there is an inclination to turn the other cheek. No one can condemn such an unselfish attitude. Unfortunately, however, such idealism is not universal.

Perhaps the biggest accomplishment has been the arousing of the profession and the awakening of a professional spirit. The New York State Society could not have succeeded without the approval and support of the various engineering societies, nor could the legislation have been effected without them.

The legislation itself was the result of the endeavors of representatives from organizations representing in some measure approximately 50,000 engineers. Every Society or branch of a Society with headquarters in the State of New York was invited to help frame and sponsor the legislative measures. With but two exceptions the response was unanimous and the results of the united committee were the proposals submitted to the legislature. For the first time practically the entire profession was a unit and the results speak for themselves. To the local sections of the national societies which co-operated, particularly the New York Section of the American Society of Civil Engineers, and to the numerous other scientific and technical organizations the New York State Society acknowledges its indebtedness. The success of the legislative program can be attributed not to any Society so much as to the growing unity of the profession which may one day consummate the inspired hope for a great "National Academy of Engineering" (comprising all branches of what is truly one great profession) devoted to the promotion of the sciences and of the art of engineering and an accompanying association of strictly professional societies devoted exclusively to legislation, enforcement of laws, qualifications for practice, standards of education and other matters affecting the engineer and the public whom he serves.

BILL 1177 BECAME LAW WITH GOVERNOR'S SIGNATURE ON APRIL 23rd, 1931.

THE GOVERNOR VETOES MULTIPLE DWELLING AMENDMENT. ENGINEERS' EFFORTS IN VAIN. CHIEF EXECUTIVE ACCEPTS ADVICE THAT BILL DOES NOT PROVIDE MEANS OF QUALIFYING ENGINEERS AND ARCHITECTS.

Scarcely less important than legislation and the awakening of a professional spirit have been the results of the efforts to eliminate incompetency, to raise the criteria of ethics and to prevent the abuse and misuse of the term engineer.

As is noted elsewhere in this issue President Steinman has rendered great service and has met with signal success in the effort to correct the abuses above noted. Through the co-operation of Chapters and individuals scores of complaints have been acted upon and the term engineer is becoming recognized as something identified with the practice of a learned profession.

In all of these activities the Society has received assistance from other organizations and in acknowledging its obligations it pleads for continued support of its endeavors.

EDITOR.

FUTURE CO-OPERATION BETWEEN ARCHITECTS AND ENGINEERS

Amity Essential to Both Professions

The legislative campaign for 1931 culminated in a manner highly satisfactory to the Engineering profession of this State. To legislators the New York State Society is grateful; to engineers it is deeply indebted; to architects it holds out the olive branch and asks for future mutual consideration of the problems confronting the two professions so closely allied by tradition and so essential to each other.

While the amended Multiple Dwelling Act requires an additional qualification, which in a measure is a scarcely warranted reflection upon the practitioners of both professions, it nevertheless, re-establishes the status quo ante so far as parity between architects and engineers is concerned. If the architect has aught to complain of he has only himself to blame, as the additional qualification was made necessary by the constantly repeated reflections upon the qualifications and ethics of engineers and the avowed profession that all architects are engineers.

The injustice of the original Section 300 was too patent to warrant its retention once the engineering profession and the public were aroused. In the January issue of THE AMERICAN ENGINEER appeared the following:—"An act that deprives so important a calling of its rightful field of endeavor and its service to the community cannot survive. It may take time but eventually right, aided by public necessity, will overcome the selfish efforts of a group that seeks to create a monopoly in the field of building construction." The legislative result is easily reconciled with that prediction.

However, there is neither cause nor desire for exultation. The engineer has fought merely to defend himself against discrimination and the public against exploitation. This accomplished he must seek to remove any bitterness or antagonism between the two professions.

Throughout the controversy the New York State Society has steadfastly and consistently maintained that its only object was to protect the engineer and the public and that any attempt to take advantage of, or to seek legislation inimical to, another profession was contrary to its policies. The present issue should not be pressed to the point where the engineer becomes the aggressor.

There may be need of further regulation or restriction of the practice of architecture and engineering, but in the opinion of the writer the time is not yet. Both callings need to first establish themselves firmly as learned professions. The future may witness the recognition of an architectural engineer, combining the architect and the engineer, but with each profession contributing to all structural projects the problem of defining or determining the field of practice would become once more a matter of controversy.

Far more essential is the elimination from practice of incompetent and unethical persons. Herein lies the big problem confronting both professions and in the accomplishment thereof the New York State Society extends to all concerned the hand of co-operation and suggests mutual respect and consideration as the most enduring promise of amity between the practitioners of Architecture and Engineering.

EDITOR.

RADIO CITY

An Opinion from the Press

The New York Herald Tribune of April 8th contains the following editorial comment:

Who's At The Wheel?

Among the questions raised by the disturbing nature of Radio City, as at present planned, there is one not only heavily involved in that enterprise but coming more and more on every hand to demand consideration. It is the question as to who is to predominate in a great architectural development—the architect or the engineer. At the moment the latter is seemingly on the crest of the wave, and he is obviously as indispensable as he is conspicuous. How without him could such a structure as the Empire State Building soar into the blue? The story of works of art like that is partly a story of engineering skill. But without the art of the architect, without his inspiration and his taste, a triumph like the Empire State Building remains inconceivable. The danger today lies in the obscuration of this axiom by the demands made in the name of utility or, in other words, of engineering efficiency, demands which Radio City has brought aggressively to the front.

(Continued on Page 6)

THE ENGINEERING PROFESSION IN BRITISH COLUMBIA

Preparing for the Future

The work of pioneering has always been its own reward. Indifference and opposition have invariably represented the majority and humanity of today has not changed one iota since the dawn of earliest recorded history. The only recompense that can or should be expected is a satisfied conscience and the conviction of a benefit that will accrue to those who come after.

The efforts of President Steinman and others who, at a far greater sacrifice than is generally known, have endeavored and are continually striving, to create and maintain for the engineering profession a position worthy of its traditions and contributions to civilization, are often given but little thought by those who are far more concerned and who have far more at stake than has Dr. Steinman.

It is encouraging and gratifying to find that in far off British Columbia there are other Dr. Steinmans at work.

The following, taken from a letter addressed to Mr. T. Keigh Legare of the National Council of State Boards of Engineering Examiners by E. A. Wheatley, Registrar for the Engineering Profession in British Columbia, merits a wider circulation that has been given it.

"We are trying by every means in our power to educate our assistant engineers and our senior engineers to the crying need that they must take more care in granting junior employment to boys. This system is already in operation, but must be developed still further, until it becomes unthinkable for any assistant engineer or senior engineer, to employ a boy as junior or draftsman unless he makes it clear to such boy that if he has not obtained his matriculation he cannot expect to be promoted in the engineering profession, and that even if he has obtained it he will not be promoted unless he passes the profession's examinations.

"We go fairly far in this Province. We apply this principle to our graduates. As you have recognized, our graduates here are required to put in four years with the intermediate status of Engineer-in-Training and during these four years to prepare to submit a thesis on part or parts of their work. These theses are not mere essays; they possibly take eight months to compile and the Board of Examiners most of whom are university professors insist on original thinking. I enclose an article on theses drawn up by one of the members of our Board of Examiners.

"Every member of our Council (eleven) and every member of the Board of Examiners (twenty-one) on every occasion try to educate members of the profession to the necessity of having a prescribed system of becoming an engineer. It may have a number of variations, comprehending both university and non-university youths, boys attending technical schools or even correspondence schools, but it must be a prescribed system, so that all who would become engineers know at an early date in their lives the requirements of the profession.

"Most interesting thoughts can be obtained by comparing the internal structures of the medical or legal professions with the engineering profession. The legal or medical professions have no societies comparable to our founder societies. Their registering bodies came first, and their societies, such as the American Bar Association and the American Medical Association came after the registering bodies. They may not have come afterwards chronologically, but they seemed in fact to come after the registering bodies inasmuch as their whole tendency appears to work up to the requirements of the registering body. For example, it would be unthinkable for a person to be admitted to the American Bar Association who was not registered first by his registration body. Whereas, our founder societies, or "voluntary" societies came before the registering bodies, both in point of time and in point of tradition and prestige. We are fighting this battle out here and it is a very hard battle, but it seems to me that ultimately the same condition will prevail, viz., that the founder societies must make the aims of the registration bodies their own aims. No person should be admitted to the voluntary societies unless holding junior registration such as you have indicated "Student," "Junior Engineer." This suggestion, alone, will take all the statesmanship and all the patience of the registering bodies.

"We have found it of value in this Province not to debate this problem with our voluntary societies, but by the appeal we make to the students and the senior engineers, after a few years we shall give such service to the students as they cannot obtain from the voluntary societies. After a period of years this condition will become natural and a thing of course. In other words, all the young engineers will be registered with the registering bodies prior to joining the voluntary societies. They will make application for membership in the voluntary societies as "Student," "Junior," and "Senior," following the passing of their examina-

tions of the registering body. If they are university graduates they will make application for membership as students while at the university; will request transfer to junior status in the profession; and will apply for their senior status in the voluntary societies *after* having submitted their theses for the registering body.

"I am not sure if I have given you the information you require. It seems to me that you may not understand our turn of mind in connection with the graduate. For example, you may be thinking that all graduates are eligible for registration, and, as a further refinement, they are at least eligible for registration some four or five years after graduation but without examination. It is in this last phase that we differ from you; we think that the graduate needs some form of examination as much as the non-university man, not so much in the interest of the profession as in his own interest. We have by experience at last arrived at a policy that *it is fatal to the interest of the graduate; it is fatal to the progress of the profession from the registration point of view, if registration is awarded on credentials.*

"We maintain that graduation, four years of engineering work, and the endorsation of an employing engineer, is merely admission on credentials. We know that this is advanced thinking, and we expect that other registering bodies will only arrive at this after having realized that the non-university men who have passed the profession's examinations are better professional men, from a registration point of view than the graduate. The non-university man owes all his advancement, and the status he enjoys to the Registration Act.

"The graduate, on the other hand, owes his status and advancement to a university training which is entirely divorced from his registration system. As a result, the university graduate adopts an attitude of superiority to his Registration Board. He acts contrary to his own ultimate interests, and to the desires of the board. He applies for registration, not when he should do so, but merely as the whim of the moment moves him, with the result of breaking down any good discipline or good conditions within the profession.

"Universities are not professional schools, speaking generally, and possibly with a few exceptions we find that a great number of graduates with engineering degrees go into business. If they stayed in business it would not be so bad, but they fluctuate between business and the junior forms of engineering and actually in time become partly qualified men. More, many a graduate falls under the control and influence of the practically trained man; very soon forgets the theory he learned at the university and in five to six years becomes just as much of a routinist as the non-university or practically trained man. We find on the other hand that if the student has been educated to the idea of the need of a thesis while an undergraduate; if his professors, due to their interest in registration work possibly by participating in the meetings of the Board, refer repeatedly during lectures to the need of theses, the engineering graduate on entering the engineering world immediately begins to make notes; immediately and continuously thinks of the application of his engineering thoughts to paper. He thinks critically of the engineering actions or processes with which he comes in contact, and of the engineering actions. Finally after four years when he has committed this worth while thesis to paper it has made him a very much higher type of man than he was before. He is also educated to learn that he owes his position in the engineering world to the registration board. He applies at the right and correct time.

"This and much more than I can put down in a letter of this type has convinced our Council and our Board of Examiners here that graduating, 4 years engineering work and merely the endorsation of one or more employing engineers, is admission on credentials, and must be done away with."

EDITORIAL COMMENT:

While not ready to accept the policy of a graduated approach to a full registration, at least not until registration has been firmly established in the minds of both public and profession, the conclusions reached by engineers of British Columbia serve as a strong vindication of the aims and efforts of the New York State Society of Professional Engineers.

Licensing should precede, not follow, admission to national societies, membership in which should everywhere be recognized as a mark of professional attainment. Licensing or registration is a credential of character and knowledge, regardless of how the latter is obtained. Membership in a national society should be a credential of professional standing indicating character and knowledge plus accomplishment in applying such character and knowledge.

RADIO CITY

(Continued from Page 4)

Changing conditions have promoted the confusion in which the matter now rests. After forty or fifty years of exploitation the steel cage principle has outdone itself, and the skyscraper of 1931 quite literally looks down upon its ancestors. It is told of the late Henry Bacon, the designer of the Lincoln Memorial at Washington, that he once refused a commission for a building of eighteen stories. Twelve stories, in his opinion, was as high as a creative artist could go. The engineer has altered all that. He can guarantee the stability of a building lifted 1,200 feet above the ground. Very well. But is the architect to rise, figuratively speaking, to the engineer's guaranty and keep his hand upon the wheel, or is he to recognize the en-

(Continued on Page 23)

LEGISLATION

Society Program Successful

When the curtain was rung down upon the 1931 legislative session the engineering profession of this state had reason to draw a sigh of relief. Success had crowned the main objectives of the campaign for legislation intended to promote and protect the interests of its members. Two of the three measures sponsored by the New York State Society had, with the assistance of engineers throughout the state, passed both houses of the legislature and awaited only the Governor's signature to make them laws. The third, approved by the senate after the opposition had exhausted every argument and every strategy, and well on its way to a similar conclusion, suffered the fate of many measures which were forwarded from either senate or assembly too late to receive consideration from the other branch of the legislature.

The legislation which passed consisted of an amendment to section 1457 of the present Engineer's License Law and a most important modification of the discriminatory section 300 of the Multiple Dwelling Act. The measure which reached the assembly too late pertained to the definition of professional engineering and was an amendment to section 1466 of the present practice Act.

Amended Section 1457 of the License Law sets forth the requirements and the methods for licensing future professional engineers. While there is perhaps room for further improvement and clarification no one can gainsay the fact that the new provisions are incomparably superior to, and more definite than, the old ones. In view of the fact that the Society is constantly being deluged with inquiries the amended section is herewith given in full with the hope that every member and every engineer will advise himself of its contents in order that he may be able to make known to others the qualifications required for the practice of the profession of engineering. Ample consideration has been extended to those whose claim for licensing is based upon practice prior to the enactment of the original law whilst the standards established for those entering the profession since that date are high enough to command the respect of other professions as well as to fulfill the purpose of adequately protecting life, health and property.

AN ACT

To amend the education law, in relation to the qualifications for licensing of professional engineers and land surveyors.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section fourteen hundred and fifty-seven of chapter twenty-one of the laws of nineteen hundred nine, entitled "An act relating to education, constituting chapter sixteen of the consolidated laws," as added by chapter eighty-five of the laws of nineteen hundred twenty-seven, is hereby repealed and such chapter is hereby amended by inserting therein a new section fourteen hundred and fifty-seven, to read as follows:

§ 1457. Qualifications, examinations, and fees for license. For license as a professional engineer evidence must be submitted that the applicant

1. Is more than twenty-five years of age;
2. Is a citizen of the United States or has legally declared his intention of becoming a citizen;
3. Is of good moral character;
4. Has satisfactorily completed a four year high school course or the equivalent thereof approved by the department, and such further educational requirements as the department may determine;
5. Has had eight years or more of practical experience in professional engineering work of a grade and character satisfactory to the board;
6. Has successfully passed the prescribed examinations.

For license as a land surveyor evidence must be submitted that the applicant

1. Is more than twenty-one years of age;
2. Is a citizen of the United States or has legally declared his intention of becoming a citizen;
3. Is of good moral character;
4. Has satisfactorily completed a four year high school course or the equivalent thereof approved by the department, and such further educational requirements as the department may determine;
5. Has had six years or more of practical experience in land surveying work of a grade and character satisfactory to the board;
6. Has successfully passed the prescribed examinations.

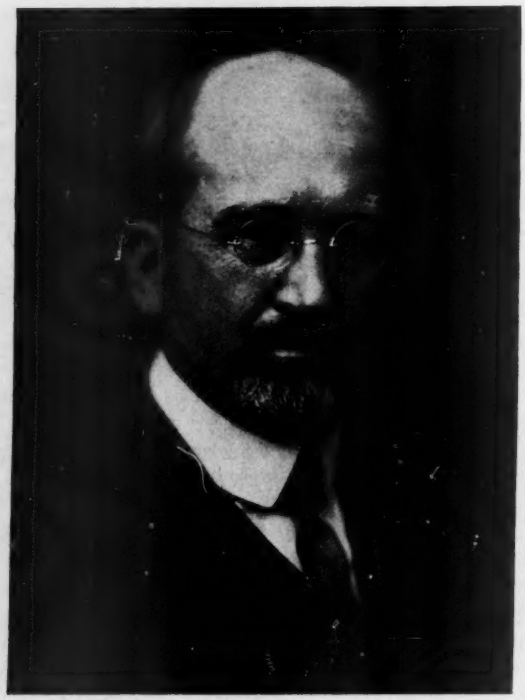
A person desiring such licenses shall make application therefor on prescribed forms.

Examinations for certificate of license as professional engineer and as land surveyor shall be in writing and in English and shall be held by the department twice each year in at least three convenient places in the state. Subject to the approval of the department, the board shall determine the subjects of the examinations, and shall submit to the department each year lists of suitable questions for examination in the mathematical and physical sciences as applied to professional engineering and to land surveying and the professional education and training required for the practice of professional engineering and of land surveying. Each written examination may be supplemented by such oral examination as the department shall determine upon recommendation of the board. The holding of serial examinations and granting of

credits and the conditions of re-examination shall be determined by the department on the recommendation of the board. The plan, scope, and requirements of examinations shall, subject to the approval of the department, be set up and published annually.

The department on the recommendation of the board may waive specific qualification requirements, except as to age, character and citizenship, in the cases of applicants who are possessed of long established and recognized standing in the engineering profession, who have practiced lawfully for more than twelve years, or who were actively engaged in the practice of professional engineering or of land surveying in this state for at least four years prior to May fourteenth, nineteen hundred twenty, or who possess membership of a grade satisfactory to the board in a national engineering society recognized by the board as maintaining suitable standards of qualifications for membership.

The board may exempt from examination an applicant who holds an unexpired certificate of license or registration to practice professional engineering or land surveying issued to him after examination by a legally constituted board of examiners in the District of Columbia or in any state or territory of the United States, or a certificate of qualification issued by the national council of state boards of engineering examiners, provided that the requirements for such certificate of license or qualification certificate, or registration are of a standard not lower than those prescribed by this article.



Dr. RALPH H. McKEE

President – New York County Chapter. Professor of Chemical Engineering, Columbia University.

Prior to January first, nineteen hundred thirty-seven, the board may exempt from all or any part of the examinations, a graduate of a college or school of engineering registered by the department as maintaining satisfactory standards. New York engineering colleges and schools and New York engineering students shall not be discriminated against by the registration of any college or school out of the state whose minimum graduation requirements are less than those fixed for New York engineering schools. Each complete year of study in such registered college or school of engineering may be accepted in lieu of one year of experience.

Subsequent to January first, nineteen hundred thirty-seven, before admission to examination, every applicant for a certificate of license as a professional engineer shall be required to submit, in meeting the educational requirement or such part thereof as the department may determine, evidence that he has graduated from a college or school of engineering registered by the department as maintaining satisfactory standards, and that prior to entrance to such school or college he has satisfied the prerequisites for admission thereto. In lieu of such graduation, an applicant may be admitted to the examinations upon presenting evidence of at least twelve years of practical experience in professional engineering work satisfactory to the board.

Upon recommendation of the board and the payment of a fee of twenty-five dollars, the department may issue a temporary permit to practice professional engineering to an engineer who is not a citizen of the United States and who has not declared his intention of becoming a citizen but who submits satisfactory evidence of established and recognized professional standing in his own country and who submits certification as to character and qualifications from at least two duly licensed professional engineers of this state. Such temporary permit shall entitle the holder to practice professional engineering in this state but only in connection with the specific field for which it is granted, and shall be subject to the same restrictions regarding expiration, renewal and revocation as a certificate of license issued as otherwise provided by this article. The annual roster shall include a separate list of the persons to whom such temporary permits have been granted.

The fee for a certificate of license as professional engineer shall be twenty-five dollars, and the fee for a certificate of license as land surveyor shall be ten dollars.

If an applicant fails to obtain a certificate of license as a result of his first application or examination he may make a second application and may be admitted to a second examination without the payment of an additional fee.

§ 2. Nothing herein contained shall be deemed

to require the present holder of an unrevoked or unexpired certificate of license to practice professional engineering or land surveying, granted under article fifty-five of the education law, to obtain a new certificate of license. Such certificates of license heretofore issued and the holders thereof shall be subject to the provisions of such article as though the licenses were hereafter granted.

§ 3. This act shall take effect immediately.

The amendment to Section 300 of the Multiple Dwelling Act is the culmination of two years of ceaseless endeavor to restore to the engineering profession in New York its inherent and traditional rights in the matter of practice and its self-respect in the eyes of the public which is more indebted to it than to any other profession for the civilization under which society today exists.

After having exhausted every legal means of righting the injustice to the engineer caused by the discriminatory section 300 the society turned toward remedial legislation. Despite the customary opposition from a certain group of architects and the employment of strategy and divers manœuvers intended to defeat the proposed amendment a united front upon the part of the engineering profession in this state was effective in convincing the legislature and section 300 now reads:

AN ACT

To amend the multiple dwelling law, in relation to allowing registered architects and licensed professional engineers to act as agents for persons desiring permits for construction or alterations.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section three hundred of chapter seven hundred and thirteen of the laws of nineteen hundred twenty-nine, entitled "An act in relation to multiple dwellings, constituting chapter sixty-one-a of the consolidated laws," is hereby amended to read as follows:

§ 300. Permit to commence building. Before the construction or alteration of a multiple dwelling, or the alteration or conversion of a building for use as a multiple dwelling, and before the construction or alteration of any building or structure on the same lot with such a dwelling is commenced, the owner [in person], or [by] *either* a registered architect *or licensed professional engineer, experienced in the planning, designing, construction, or alteration of such dwellings, buildings, or structures,* acting as [his] *the* agent *of the owner,* shall submit to the department charged with the enforcement of this chapter a detailed statement in writing, verified by the affidavit of the person making the same, of the specifications for the construction and for the light and ventilation of such dwelling or building, upon a blank or form to be furnished by such department, and also a full and complete copy of the plans of such work. Such statement shall give in full the name and residence, by street and number, of the owner or owners of such dwelling or building. If such construction, alteration or conversion is proposed to be made by any other person than the owner of the land in fee, such statement shall contain the full name and residence, by street and number, not only of the owner of the land, but of every person interested in such dwelling, either as owner, lessee or in any representative capacity. Said affidavit shall allege that said specifications and plans are true and contain a correct description of such dwelling, building [,] *or* structure, and of the class and kind thereof and of the lot and proposed work. The statements and affidavits herein provided for may be made by the owner, or by a registered architect *or licensed professional engineer.* No such architect *or engineer* shall be recognized as the agent of the owner, unless he shall file with the said department a written instrument, signed by such owner, designating him as such agent. Any false allegation in respect to a material point in any such affidavit shall be deemed perjury. Such specifications, plans and statements shall be filed in the said department and shall be deemed public records, but no such specifications, plans or statements shall be removed from said department. The said department shall cause all such plans and specifications to be examined. If such plans and specifications conform to the provisions of this chapter and to

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JAMES M. WELSCH

Past President of the Society. First President of Society. Now engaged in private practice as a General Consultant.

SERVICE TO THE PROFESSION

Campaign to Protect the Term "Engineer"

Dr. D. B. Steinman, as President of the New York State Society of Professional Engineers and as Vice-Chairman of the New York State Board of Licensing for Professional Engineers, has been personally conducting an effective campaign, by correspondence and interviews, to stop the improper or unauthorized use of the term "Engineer" or "Engineering." The results have been gratifying, prompt correction being secured in practically all instances. The following are some typical cases handled in New York State within the past few months.

A leading corporation manufacturing radio equipment featured the phrase "Radio Service Engineers" in their display advertising. Upon protest and explanation by Dr. Steinman, they agreed to avoid such designations in the future, and promptly substituted the phrase "Radio Service Men" in their subsequent advertising.

A contractor who displayed the designation "Engineer-Contractor" was found to be without a professional engineer's license. He promptly agreed to delete the term "Engineer" from his letterheads.

An architect who used the designation "Architects-Engineers" on his stationery, challenged Dr. Steinman's objection and appealed to the Attorney General's office. The latter ruled that registration of anyone as an architect does not entitle him to use the designation "Engineer." The man claimed the right to call himself an "Engineer" because he had been designing bank buildings for many years, but he evaded Dr. Steinman's invitation to apply for a professional engineer's license. An investigator of the State Department of Education was assigned to the case, and has since reported that the man has agreed to remove the term "Engineers" from his stationery.

An incorporated firm using the designation "Engineers and General Contractors" was investigated and found to be professionally qualified, though unlicensed. The head of the firm promptly filed his application for professional engineer's license.

Another firm employing the designation "Engineers and Contractors" on its letterheads changed this promptly, upon Dr. Steinman's protest, to read "Engineers and Contractors Supplies" as a temporary correction, and promised to substitute the phrase "Fire Protective Devices" on all future stationery.

An eminent patent attorney who used the designation "Patent Attorney-Consulting Engineer" on his letterheads, was found to be unlicensed to practice engineering. He satisfied Dr. Steinman as to his professional qualifications, and filed his application for license.

A firm using the designation "Consulting and Contracting Welding Engineers," changed their advertising, promptly upon request, to read "Consulting and Contracting Welding Specialists."

A company specializing in interior decoration displayed the designation "Decoration and Furnishing Engineers" on letterheads and in advertising. It appears that they had originally used the phrase "Decoration and Furnishing Architects," until stopped for lack of an architects' license. Upon protest by Dr. Steinman, they agreed to discontinue the misappropriation of the term "Engineers."

An incorporated firm displaying the phrase "Electrical Engineering and Equipment" was reported. Upon Dr. Steinman's protest, the head of the firm filed application for professional engineer's license.

Another incorporated firm has been advertising "Smoky Fireplaces Made to Draw—Engineers—Contractors—Consultants." The head of the firm satisfied Dr. Steinman as to his professional qualifications, filed his application for license, and expressed his willingness to correct his advertising copy to eliminate any professional objections.

LEGISLATION

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the building ordinances and regulations, they shall be approved by such department, and a written certificate to that effect shall be issued to the person submitting the same. Nothing contained in this section shall prevent the department charged with the enforcement of this chapter from issuing a permit for the erection of the cellar walls of a dwelling, provided plans have been filed in the said department for the erection of such walls and have been found to conform to law, but no work shall be done above the first tier of beams under any such permit. The department may, from time to time, approve changes in any plans and specifications previously approved by it, provided the plans and specifications when so changed shall be in conformity with law. The construction, alteration or conversion of such dwelling, building or structure or any part thereof shall not be commenced until the filing of such specifications, plans and statements, and the approval thereof, as above provided. The construction, alteration or conversion of such house, building or structure shall be in accordance with such approved specifications and plans. Any permit or approval which may be issued by the department charged with the enforcement of this chapter, but under which no work has been done

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DEATH OF HON. JAMES T. FOODY

Co-Sponsor of all Engineering Legislation

The death of Assemblyman James T. Foody, of Steuben County, which occurred in Bethseda Hospital, Hornell, on April 11th, was a shock and a distinct loss to the engineering profession of this state.

Mr. Foody had endeared himself to those who knew him. Able, kindly and a thorough gentleman, he was always accessible to any one who desired assistance. His legal practice had brought him into close contact with engineers and few men, even within the profession, had so complete a knowledge of what engineering is and should be as a profession.

As a student at Cornell he had early in life formed an appreciation of the work of engineers and as a legislator he was a strong champion of their cause. His remarks at the Winter Meeting of the Society in Albany were forceful and will remain with us. On that occasion he delivered an address the substance of which might now well be construed as a legacy. "Do not under any conditions divide nor permit others to divide your profession."

To the bereaved family the Society expresses its sympathy and acknowledges a debt of gratitude.

Requiescat in pace.

LEGISLATION

(Continued from Page 10)

above the foundation walls within one year from the time of the issuance of such permit or approval, shall expire by limitation. Said department shall have power to revoke or cancel any permit or approval in case of any failure or neglect to comply with any of the provisions of this chapter, or in case any false statement or representation is made in any specifications, plans or statements submitted or filed for such permit or approval.

§ 2. This act shall take effect immediately.

EXPLANATION—Matter in *italics* is new, matter in brackets [ ] is old law to be omitted.

The Society and the profession are greatly indebted to Senator Desmond, a member of Orange County Chapter, who sponsored the bills. Together with Arnold Chapman, Vice-President of the Society, and Chairman of the United Engineers' Legislative Committee, he fought every step of the way, met every objection raised by legislators and checkmated every move of the opposition.

The closing week of the legislative session was a hectic one. Unexpected opposition to the measure amending section 1457 of the License Law developed after the Senate had forwarded it to the Assembly. Senator Desmond and Chairman Chapman wired for assistance. The result was an immediate written appeal to every engineer as well as to every legislator in the state, together with the presence in Albany of President Steinman and some thirty representatives from the Metropolitan chapters alone. The value of the Society as an organization was most effectively demonstrated by its splendid response to this sudden appeal and merits consideration from and support by professional engineers of this State.

Two other legislative measures which received the attention of the Society were a proposal pertaining to the practice of accountancy and a measure to create a Department of Fine Arts both of which failed of passage. If enacted into law such legislation might have been construed in a manner tending to circumscribe or limit the practice of the engineer and the Society after having requested amendments thereto, which were not accepted, registered opposition. To the regulation of the practice of accounting as well as to the creation of a fine arts division of the state government the Society has no objections. The practice of accounting is a matter for accountants. The establishment of an agency to improve the appearance of structures merits hearty approval from engineers. However, both can be accomplished without in-

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THE ENGINEER—PAST AND FUTURE

Historical Comment

It is said that necessity is the mother of invention; and, if we reflect a moment, this apparent truism is but a natural accompaniment of the law of self preservation.

The basic activities of mankind present themselves in an undeniable sequence and from those essential to the preservation of life, evolve the pursuits of humanity in the order of their necessity. First and foremost of the labors of man is that of procuring food and drink to provide sustenance for maintaining his earthly existence. In this category as actors come the huntsman, fisherman and farmer. Second, and closely associated with the first is human occupation, the provision of shelter and clothing for protection against the elements. Herein may be included the work of the builder, weaver and producer and shaper of materials. These two primitive activities form the basis of and precede innumerable occupations incidental to the preservation and propagation of the species. Other pursuits follow: callings to improve, develop and ameliorate the condition of humanity; but without the first two the remainder would be impossible and man could not survive in any state whatsoever.

You may ask wherein these things concern the profession of engineering. Simply this: the earliest builders and producers employed, probably unknowingly, principles and natural laws which placed their efforts within the realm of engineering.

An engineer conceives, plans, lays out and constructs or creates, employing the laws, forces and materials which nature has provided and since man, even in a state of savagery, isolation or nomadism, required food, water, clothing and shelter, it is evident he planned and constructed from the very beginning of time. In view of this it is quite certain that in the order of necessity and chronology, the engineer antedates the doctor, lawyer, teacher or merchant, for without the engineer none of these could well carry on their practice.

In fact, the association between the engineer and nature itself is so close as to practically preclude the possibility of man's existence without some application of the universal laws. This condition is true even beyond the sphere of man. It prevails amongst the lower animals as may be evidenced by the principles and methods employed (apparently intuitively and unconsciously) by the beaver, who constructs dams and fortresses which baffle the ingenuity of man; by the wasp, the bee, the ant, rodents, birds and various other seemingly non-reasoning creatures. What guides them none knows, save only the great universal Ruler Who veils Himself in His wisdom and Who reveals so little of the cosmos that reasoning man is impotent to comprehend even His smallest creature.

Understanding of the engineering scheme of creation and determination of man's first application of nature's laws are alike beyond the ken of present day humanity. And so, when the dawn of civilization first breaks over the dim horizon of antiquity, we find mankind busily engaged in constructing and expanding cities and in developing trade and commerce. This is mute but convincing evidence that the human mind had long been occupied with the study and investigation of means for carrying on such activities.

The erection of buildings and other edifices; the construction of highways; the drainage of low and marshy lands; the irrigation of dry and arid plains; the securing of water, conveyed oft times from great distances by canals and aqueducts; the protection of valleys from flood, and the coast from the fury of a sea lashed by the elements; the construction of ships and the provision of docks, piers and wharves to embark and disembark passengers and freight, appear to have been in progress as long as human endeavor and human ties have drawn people away from the sufficiency of self and isolation into the dependency and turmoil of community existence.

The study of history has ever been a fascinating pastime for mankind, and the more uncertain and hazy the subject the more interesting it becomes. Perhaps this is because it allows the imagination such great play. Some great historian, (one is inclined to think it was McCauley) is reported to have said: "history is a tissue of accepted lies." He was probably not far wrong. However, one accompaniment of history can scarcely be doubted. Expression is given to the ideas, inventions and creations of the engineer and to this influence upon the development and expansion of human society.

What imagination has to be conjured up to describe the beginnings of civilization in Mesopotamia and Egypt—in the valleys of the Euphrates and the Nile—the oft discussed cradles of the human race.

Ancient Babylonia—what do we know of it that can be accepted as being beyond the speculative state? That the inhabitants built great canals, irrigated deserts and erected marvelous buildings and gardens. Egypt—that land of mystery, in the search for whose history and treasure many lives have been sacrificed. The sun rose and set on twenty-six dynasties before the first Ptolemy ascended the throne of Egypt over 300 years preceding the Christian era, and what history and civilization lie buried in that sepulchre of antiquity are, and will probably remain, hidden from the scrutiny of man. One thing alone, (engineering),

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ENGINEERS AND BUILDING DESIGN

A Synopsis of Conditions

By D. B. STEINMAN

The protection of life, health and property is the basis of laws, acts, ordinances and rules relevant to the design and erection of buildings or other structures of a public or semi-public nature. The following data which formed part of the arguments before the legislature at Albany are printed for informative purpose.

1. In New York City, all building plans, whether prepared by architects or engineers, must be examined and approved by the Bureau of Buildings. All of the plan examiners are engineers.

2. Any questions on the adequacy of construction are carried to the Board of Standards and Appeals. All examiners in this department are engineers.

3. All building construction by the State of New York is under the Department of Public Works, directed by engineers. The head of the department is an engineer.

4. N. Y. State Civil Service Rules for building construction experts require candidates to be licensed professional engineers or architects.

5. In 6 states, men trained in either architecture or engineering, may secure a license as registered architect.

6. The leading technical books used by architects are written by engineers. Kidder's Architects Hand Book is written almost exclusively by engineers. Hool & Johnson's Hand Book on Construction, covering building design and construction is by 50 editors, of whom all but two are engineers.

7. President Hoover's Committee for developing building codes and design standards for buildings is composed almost entirely of engineers.

8. All important work on public buildings and structures in the United States is directed by engineers.

9. Most of the technical instruction in architectural colleges is given by engineers.

10. Architects cannot prepare the plans for important buildings without engaging consulting engineers for the essential parts of the design.

11. Most architects are not capable in structural design, design of foundations, electrical and mechanical design, design of heating and ventilation, sanitary equipment, elevators, concrete floor and roof arches, steel trusses, girders, columns, footings. These engineering items comprise most of the cost of the building construction, and are the essential items affecting public safety.

12. The Architects Board admitted last year that certain classes of buildings are clearly engineering. (Other classes were to be discussed later).

13. Engineers receive far more intensive training in structural design than do architects.

14. The Engineers Board requires knowledge of structural design of all applicants for engineers license. (As a rule, registered architects fail to pass these tests).

15. Structural work of all large buildings is designed by engineers, as are also mechanical work, electrical work, heating and ventilating, etc.

16. Annual meeting (1931) of American Society of Engineers—Several sessions devoted to building design—Papers by engineers, discussed by engineers, on Empire State Bldg., Bank of Manhattan Bldg., Wind Bracing of Tall Bldgs., etc.—Prize given to engineer for paper on design of a theatre building.

17. Annual meeting (1931) of Engineering Institute of Canada devoted entirely to five papers on Engineering of Sun Life Building, Montreal—by engineers.

18. Recent issue of Engineering News-Record (Feb. 19, 1931) devoted entirely to building design.

19. Recent issue of Journal of Engineering Institute of Canada (February 1931) devoted entirely to papers on building design by engineers.

20. No architectural magazine features articles on the safe design of buildings.

21. Practically all books on building design written by engineers.

22. The modern design of large buildings has been developed by engineers.

23. Professor in architectural school in New York State told students he would not take time to teach them structural design, because they could hire engineers to do it for them.

24. Letter from architect, in my file, claims right to call himself Engineer on his letterhead (without license) because he has been designing buildings all these years.—Calls it engineering.

25. The architects, in their licensing handbook, call it Architectural Engineering,—an admission that it is engineering. (How many architects have passed this examination? Only about 13, according to the records.)

26. The architects offer to let a division of our profession design buildings without restriction—an admission that engineers do design buildings. (We naturally decline to divide our profession. No other profession would consent.)

27. In the American Society of Civil Engineers, over 2500 engineers are registered as engaged principally in structural design.

28. Appearance is architecture. Safe design is engineering.

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THE RIGHT OF ENGINEERS TO FILE BUILDING PLANS

Misunderstanding Still Prevails

The receipt of the following communication indicates that attempts are still being made to deprive engineers of the right to file plans for building structures.

Newburgh, N. Y., March 16, 1931.

New York State Society of Professional Engineers,
Mr. Ernest F. Fox, Secretary, New York, N. Y.
Dear Sir:

After making a layout for a small industrial building for a member of my family, I am informed by the building inspector of our city that the plans must be made by a *registered architect* and filed with the Labor Dept. at Albany.

I am a civil engineer registered in this state and cannot remember anything in the law to prevent me from filing plans for an industrial building of this kind. I thought that the only thing of this nature that had been passed was in connection with the Multiple Dwelling Act which I do not think covers this case.

Can you give me any information in this matter at some early date?

Yours truly, Professional Engineer.

The following response speaks for itself:

Dear Sir:

Your letter relevant to filing plans for a small industrial building has been referred to me.

The information given you by the building inspector is without foundation in fact. It is merely another instance of the effect of propaganda. There is nothing in any law which warrants such a statement.

I am enclosing a copy of an opinion rendered by the Board of Regents through its legal committee which you might show to the inspector. A loose statement severely condemned by the Regents was responsible for the ruling of the Law Committee of the Board of Regents.

May I suggest that you communicate with Mr. Harry C. Carpenter of 76 North Street, Middletown, who is the immediate past president of the Orange County Chapter of the New York State Society of Professional Engineers, or with Mr. George Hutchinson of 368 Grand Street, Newburgh, who is the president-elect of the Chapter. They will advise you.

Cordially yours, A. V. SHERIDAN.

A letter written in 1930 by a then Assistant Deputy Attorney General assigned to the State Department of Education and addressed to Supt. of Buildings, P. J. Reville of the Borough and County of The Bronx is still causing confusion in the minds of some officials and embarrassment to many engineers.

It does not require one versed in law to appreciate the impropriety and incorrectness of the context of this letter which is herewith printed.

"Your letter of the 2nd inst. addressed to Dr. James Sullivan, requesting information as to any rules, or regulations of the Regents regarding the enforcement of the provisions of Art. 56 of the Education Law by the officers charged with the supervision of the erection of buildings, has been referred to me. I note that you have been advised by Dr. Sullivan that, as yet, no rules or regulations of the Regents have been formulated.

In view of this fact I would not feel justified in interpreting sections of the law at this time. I would suggest, however, that until such a time as you were advised that rules have been formulated, that you be guided by the provisions of the law, itself, particularly that reference to the provisions which make it a misdemeanor for any person, other than registered architect, to design plans and specifications for structures, or alterations, exceeding $10,000 in costs."

It modestly suggests that no interpretation is justified and immediately proceeds to read into the law that no one but an architect has a right to design *any* structure. The law says no such thing. An abstract from Section 1476, paragraph 2, of the Architects' Practice Act, reads as follows:

"This article shall not be construed to effect or prevent the practice of engineering by a licensed professional engineer duly licensed under the laws of this state."

The Board of Regents, subsequent to the writing of the letter in question and at the request of the New York State Society, held a hearing in the Bar Association Building in New York at which time Past President Sheridan was permitted to plead the case of the engineer.

After reading the law and hearing arguments the Board severely criticised the sending of the letter in question and prepared a statement in connection with the rights of engineers so far as the matter came within the province of the Regents. At a later hearing held in Albany the legal committee of the Board advised that in their opinion the clause in the Architects' Law to the effect that the said law should not be construed to affect or prevent the practice of professional engineering by a licensed professional engineer clearly indicated the intent that the said law should in no way affect the practice of engineers and that if engineers had prepared and filed building plans prior to the architects' law they had a perfect right legally to continue to do so.

The following should be read in conjunction with the previous letter of Mr. Fleckenstein:

The University of the State of New York

THE STATE EDUCATION DEPARTMENT
ALBANY, NEW YORK

Feb. 19, 1930.

The Board of Regents of the University of the State of New York today issued the following statement regarding the Architects' Registration Law.

The Board of Regents has been advised that serious questions have been raised as to the operation and effect of the so-called Architects' Registration Law, being Article 56 of the Education Law.

The Board has not adopted any rule or regulation, and feels that it would not be wise, at this time, to adopt any rule or regulation, attempting to define the rights of licensed professional engineers to design plans or prepare specifications for buildings, structures or alterations costing more than ten thousand dollars.

The Board of Regents has not adopted or approved any interpretation of the law which would make it a misdemeanor for a licensed professional engineer licensed under the law of this State, in a proper case in the practice of engineering, to design such plans or prepare such specifications.

The courtesy and co-operation of the Board and of the Department of Education merit an acknowledgment which is here recorded.

The following are two of numerous articles which appeared in the public press at the time. There was no warrant for such publicity which is still being used to discourage engineers in various parts of the state.

THE YONKERS STATESMAN

Only Licensed Architects Can Submit Plans

County Society Receives State's Ruling on Building Law

White Plains, Jan. 14.

Building departments of all cities, towns and villages in Westchester must refuse to accept plans for new buildings unless they are prepared by a duly registered architect, according to a ruling of the Attorney General received here by the Westchester County Society of Architects.

Under the Architects' Registration Law, as amended and effective Jan. 1, last, owners and builders are prohibited from filing plans for buildings to cost more than $10,000 unless they are prepared by a registered architect and are stamped with his seal, the Law Department of the state declares.

The interpretation of the law is made by George V. Fleckenstein, Deputy Assistant Attorney General, in reply to a letter from William C. Halbert, Jr., of New Rochelle, Secretary of the Westchester County Society of Architects.

"All violations of the statute," writes Fleckenstein, "should be reported to Dr. James Sullivan, Assistant Commissioner of Education, or to the undersigned and it is not necessary that they be in any particular form. Sufficient information, however, should be furnished in order that the case may be properly investigated. In this connection I am glad to say that I anticipate the appointment of an inspector to investigate all violations of the Architects' Law and that such an appointment will eliminate the necessity for those making the complaint to secure the legal evidence as it has been necessary for them to do in the past.

"An unincorporated society of registered architects should report violations as indicated in the preceding paragraph.

"An owner or a builder may not file plans for a structure costing more than $10,000 unless such plans have been prepared by a registered architect and are stamped with his seal.

"The building departments of the various subdivisions of the State are required to assist the Regents in the enforcement of the provisions of Article 56, which in effect means that no plans will be accepted for filing unless they have been prepared by a duly registered architect."

There are 50 members of the Westchester County Society of Architects and according to Howard B. Peare, president, the society will conduct a vigorous campaign to compel enforcement of the registration law.

TARRYTOWN DAILY NEWS

Monday, January 13, 1930

Architects Must Approve All Building Plans

White Plains.—Building departments of all cities, towns and villages in Westchester must refuse to accept plans for new buildings unless they are prepared by a duly registered architect, according to a ruling of the Attorney General received here by the Westchester County Society of Architects.

Under the Architects' Registration law, as amended and effective January 1 last, owners and builders are prohibited from filing plans for buildings to cost more than $10,000 unless they are prepared by a registered architect and are stamped with his seal, the law department of the state declares.

The interpretation of the law is made by George V. Fleckenstein, deputy assistant attorney general, in reply to a letter from William C. Halbert, Jr., of New Rochelle, secretary of the Westchester County Society of Architects.

Chapters are urged to call to the attention of all building bureaus, officials, examiners and inspectors, the statement of the Regents and to the Law. No official has a right to refuse plans without quoting the law justifying such action.

The Chapter should advise the Society of attempts to prevent engineers from filing plans, except those cases coming within the scope of the Multiple Dwelling Act, the discriminating feature of which only awaits the Governor's signature for its removal.

ANNUAL MEETING AND CONVENTION

New York, May 16, 1931

The fourth annual meeting and convention of the Society will take place at the Hotel Commodore, in the City of New York, on Saturday, May 16, 1931.

The meeting will be preceded by a tour of inspection through the world's tallest structure, the new Empire State Building, which is to be opened to the public early in May. This great edifice rising 1200 feet toward heaven presents what is perhaps the most striking example of architectural and engineering co-ordination and co-operation that is to be found anywhere in the world of buildings. The inspection will get under way at 1:15 P. M., and those who expect to be present are urged to be on hand at the appointed hour. There will be no charge to members and guests of the Society. The usual feet of $1.00 per person will be cared for through the kindness of a friend and some financial assistance from the society itself.

In the evening, at 7:00 o'clock, the annual dinner to which ladies are invited will take place. The Hotel Commodore will be host and in addition to the dining hall several guest rooms will be at the disposal of members and friends who attend the dinner. A prominent speaker from each of the fields of public, business and professional life will deliver addresses. A special committee will be on hand to offer assistance to visitors and to aid in every possible manner in promoting contacts and good fellowship.

The Society dinners have never been mere formal affairs. This year the occasion will take the form of a celebration to commemorate the success of the engineer's legislative efforts to re-establish his standing as a professional man, and the dinner committee has made every possible provision, within its financial means, to entertain those who attend. The opportunity to meet and know the other engineers who, from all parts of the state, rendered such splendid assistance in furthering the successful legislation is especially stressed. A special invitation to inspect the guest rooms before and after the dinner is extended to visitors from cities outside New York.

The annual business meeting of the Society will begin at 3:30 P. M. At this time complete reports concerning the endeavors of the past year will be presented. Legislation, publicity, the campaign against the indiscriminate use of the term engineer, chapter activities, society emblem, financial reports, membership, incorporation, public relationship and other matters will be reported upon. Discussion by members present will follow.

The results of the annual election will be made known and the induction of officers and directors will take place during the meeting.

A special plea is made to every Chapter in the hope that none will be without representation. Each Chapter should designate at least two official delegates in addition to those who expect to attend either as members or guests of the Society.

Let the occasion be the success it warrants. It is up to you to make it so by attending. Ladies and non-members of the Society are invited to attend all functions, including the dinner. There will be no charges except for dinner which will be $5.00 per person.

The convention committee is composed of J. A. Nichols, chairman; P. M. Corry, treasurer; F. E Lane, financial secretary; T. F. Normile, E. J. McCormick, J. F. Lamb, H. A. Kidder, G. B. McAteer, A. V. Sheridan.

The chairmen of special committees are: J. A. Nichols, dinner; Edw. J. McCormick, speakers; P. M. Corry, inspection; T. F. Normile, tickets.

John Avery of Westchester County (Ambassador extraordinaire in the interest of sociability) will preside over guest room activities.

Persons outside the City of New York who wish to make reservations to stay over or who desire information relative to the city itself are requested to write to the committee in ample time to permit of proper response and assistance.

For dinner reservations apply to your Chapter or to Thos. F. Normile, chairman, (Grand Central Terminal, Room 2952).

Make the sacrifice and attend. You will not regret the expense.

Dress—informal.

LEGISLATION

(Continued from Page 11)

volving the engineering profession in further controversy, if the main purpose of the legislation is clearly expressed.

AN ACT

To amend the executive law, in relation to the division of fine arts, creating the fine arts commission, defining its powers and duties, and making an appropriation for the expenses of the commission, and repealing article two-b of the public works law.

Following is a copy of the proposal as introduced in the Senate by acting majority leader Fearon of the Upper House. The matter will doubtless come up again next year and engineers

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THE CURRICULA OF ENGINEERING SCHOOLS

Urgent Need for Re-adjustment

With the definite establishment of written examinations as a future requirement for the qualification of applicants who seek the right to practice professional engineering in this state the necessity for revamping the curricula of the various engineering schools becomes increasingly evident.

The undergraduate courses of instruction must in future be such as will enable the engineering graduate to pass his examinations for admission to practice and should be so developed as to offer a thorough training in the fundamentals and the sciences which underlie the general practice of engineering, rather than to suggest electively intensive instruction with a view to immediate specialization. This future requirement is as it should be. In law and medicine the specialization comes after admission to practice and the same procedure should apply to engineering.

Professional specialization predicates personal adaptability and judgment. The person yet in his teens is in no position to make a well justified choice until he has had an insight into the field, requirements and possibilities of the profession generally.

An analysis of the experiences of young men possessed of highly specialized training will undoubtedly demonstrate the fallacy of too early intensive training. Reviews of the personnel of departments of public works have repeatedly shown that a large percentage of those engaged on the design and construction of sewers, highways, bridges and similar projects have had intensive scholastic training in electrical, chemical and mechanical phases of the profession, and those engaged on electrical, chemical or mechanical work originally intended to become specialists in what is termed civil engineering. This condition undoubtedly prevails generally and merits consideration.

The requirements, the opportunities and the personal proclivities can rarely be known before the individual has made an excursion into the world of practice. The problem of the young engineer is as much one of conditions as is that of any young lawyer, doctor or architect. He must find himself, before choosing a specialty, if his career is to justify that choice.

It is manifestly unfair, for the profession as a whole, as well as for the school, to hold out promises with little or no assurance of their fulfillment.

In the January issue of the "Civil Engineer" appears an interesting complaint illustrating one of the problems confronting the young engineer. The following is abstracted from the letter of the complainant who is a junior member of the American Society of Civil Engineers:

"Dear Sir:

"In the November issue of CIVIL ENGINEERING, I read with great interest the abstract of the committee report, 'Practical Operation of Sewage Works.' Having graduated from the University of Illinois in sanitary engineering, and having kept in touch with the men I knew there, I feel as though I am justly able to give you the thoughts of men of my training and experience when they read an article such as the one mentioned above.

"First of all, I believe that not one graduate in sanitary engineering from the University of Illinois in the past four years has obtained a position as plant operator. Neither have any of them been able to obtain such work as would give them the experience required by the recommendations in the report. Instead, we must take the closest thing to it that we can get, which usually is just design and construction work.

"Fully 50 per cent of the graduates in this course would jump at an opportunity to get work and experience in this line. And the article says trained men are lacking. There are plenty of them. But they cannot get a position without experience and to get experience they cannot get a position."

The task of reconciling theories with conditions must be met with very shortly and the New York State Society should consider, at an early date, the problem of developing the curricula of the engineering schools of this state with a view to enabling graduates to meet the legal requirements for admission to the practice of engineering generally.

The time is opportune for a conference in which will be represented the various institutions of engineering education, the Board of Licensing for Professional Engineers and the practicing engineer as represented by his professional society.

The Board of Licensing for Professional Engineers is the logical body to call such a conference and to act in an advisory capacity in connection therewith.

The selection of men to participate in such a conference might well be left to the school and to the society with the suggestion that in both instances the personnel chosen should consist of individuals possessed of imagination and a desire to lend themselves constructively to the problem.

The New York State Society offers its services toward the accomplishment of such a conference.

THE ENGINEER—PAST AND FUTURE

(Continued from Page 12)

offers unquestionable evidence of a wealth and luxury unknown to even modern times. The erection of the obelisks and pyramids; desert and arid lands made into veritable oases of luxuriant vegetation; rivers diverted and controlled; the land protected from floods and the various projects by which the plagues, pestilences and carnivori were removed from what later formed some of the fairest portions of the Nile valley, give mute but undeniable evidence of the contribution of the engineer of that far distant time to the civilization of his day.

The grand canal of China, 700 miles in length, dates back some 3000 years; the tunnel under the Euphrates perhaps 4000 years and the remains of other structures of equal or greater antiquity bear witness to early engineering activity. In fact the beginnings of recorded history appear to be contemporary with the engineering accomplishments of the day. Great nations of the past have bequeathed to posterity nothing more symbolic of their civilization than the evidences of engineers whose identities unfortunately have been lost or incorporated in the priests, kings and warriors who at various epochs ruled humanity of antiquity.

In the heyday of their glory Assyria, Phoenicia, the Grecian States, Carthage and Rome, carried on enormous enterprises and boasted of great civilization. Who made possible the means for carrying on the commerce of Tyre, Sidon and Carthage, by constructing harbors, docks, ships, cranes and various other devices incidental to such activities? Republican and imperial Rome—which is still the sun of national chronology!—Who built the Cloaca Maxima, the famous sewer whose remains are yet extant; who led the water for hundreds of miles through aqueducts, often requiring viaducts and bridges to span the valleys traversed, one of which aqueducts, the Aqua Virgo, still supplies water for fountains in Rome; who constructed the famous Appian Way; and the walls which prevented Hannibal from destroying the City of Rome; and who built the bridges which spanned the Tiber and the one across the Rhine over which Caesar led his legions into Germany? The answer is the engineer. Who constructed the fortifications which defended ancient cities; who constructed the engines of war with which armies attacked? Again the engineer. History tells of the destruction of the Roman fleet which besieged the ancient City of Syracuse in 212 B. C. According to report this was accomplished by a single man, one Archimedes, a Greek mathematician and engineer, who set fire to the attacking fleet by concentrating the sun's rays through the medium of mirrored glasses. (This last is history, not a statement by the writer.)

One oft times hears mention of the seven wonders of the world—those of antiquity—the Colossus of Rhodes; the pyramids; the Temple of Diana at Ephesus; the statue of Zeus at Olympia; the Mausoleum at Halicarnassus; the Pharos or light house at Alexandria; the Hanging Gardens of Babylon; and those of less ancient times—the Coliseum at Rome; the catacombs at Alexandria; the Great Wall of China; the Druidical Temple at Stonehenge, England; the Leaning Tower of Pisa; the Porcelain Tower at Nankin; the Mosque of St. Sophia at Constantinople, and for good measure, the Taj-Mahal of India; all silent but forceful reminders of the architect and engineer. What other calling or avocation has built such enduring monuments to its creative genius.

Throughout the history of the world the engineer has ever been the pioneer of civilization. Evidences of his creative genius are to be found in every part of the world and monuments to his sacrifices are ever and anon being brought to light by explorers, archaeologists and students. The glory and civilization of once great but long entombed peoples have become mere conjectures, but many creations of their engineers still survive as convincing proof of early contributions to the march of mankind. Down through the ages he has scat-

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tered the marks of his endeavors over the entire face of the globe and today his mental efforts are exploring the realms above the surface, the depths of the seas and the bowels of the earth.

Ever and anon the story of great nations has been inseparably linked with their great undertakings, and the development of a nation has invariably kept pace with the accomplishments of its great engineers who blazed the trails over seas, mountains and continents.

Nations, like individuals, come and go in unceasing regularity and doubtless will to the end of time. McCauley, the English historian, pictures the New Zealand traveler of a future age gazing upon the ruins of St. Paul's from the desolation of what was once London Bridge. He realized only too well that the symbolism of England's greatness could best be conjured in the mind of a future age by the remains of its great cathedral and historic bridge. And so, too, will the Suez Canal, the Panama Canal, the Eiffel Tower, the great bridges across the rivers, the towering structures of cities, the tunnels through the Alps and under the waters, the power plants of the Pyrennees and Niagara Falls, the water supply system of New York, the railroad, steamship, telegraph, telephone, radio, airplane and other feats of engineering and architecture, be the milestones for future historians, long after the speculations of Wall Street and the legal and medical opinions of prohibition, woman suffrage and other feverish activities and burning questions have sunk into oblivion.

For the past the story of the engineer, as of mankind, is finished; for the future it is not yet begun. Imagination, not history, must be used to paint the picture of tomorrow.

Four epochs may be said to compose the panorama of human progress (omitting periods covered by the somewhat interesting teachings of self-styled scientists whose speculative theories of man's earliest existence are, however, as yet incapable of that demonstration which warrants the application of the term science).

First: there is the epoch or cycle of prehistoric and tribal life, ruled and regulated by a pagan priest craft; second, the age of nationalism and imperialism, symbolized by the right of might and the rule of the warrior; third, the era of reorganization and regeneration of human society under the urge of religion, reason and law, signalized by the ascendancy of lawmakers and lawgivers; and last,—a dazzling, somewhat incomprehensible future,—science and engineering pointing the way to human endeavor. What shall be the issue—concord or chaos? Happiness or misery? The answer rests largely with the engineer. To him will be entrusted the future of mankind. Is he prepared to assume his responsibility? Have his rapid advances during the last century been accompanied by a realization that, in keeping with all mankind, his first duty is to his creator and his second to society and that his prime purpose is to preserve mankind, not to destroy it? Is he cognizant of his own limitations and the dangers of unbridled application of scientific knowledge?

The discoveries and inventions of the last century have entirely changed the complexion of humanity's efforts. Combined with what was contributed before, the sum of human knowledge of science and of its applications, seems enormous. But how relative that term enormous is,—for apparently man has but scratched the surface. The possibilities seem unlimited but it is well to turn occasionally to the spiritual realm—to philosophy, to history, and to reflection—to point out the dangers which accompany too fast a pace. Let mankind not lose sight of his comparative insignificance. Let him rather emulate Sir Isaac Newton —who formulated laws of attraction, of light, of Planetary motions; who contributed so largely to what is perhaps the most abstruse subject which mankind has yet been able to apply with certainty of result—the calculus of mathematics. This man whose mind probably soared as high as that of any other mortal being, estimated himself in the

(Continued on Page 23)

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LEGISLATION

(Continued from Page 16)

are urged to study the same in conjunction with the existing law and to forward comments to the New York State Society:

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section thirteen of chapter twenty-three of the laws of nineteen hundred nine, entitled "An act in relation to executive officers, constituting chapter eighteen of the consolidated laws," as added by chapter six hundred and seventy-six of the laws of nineteen hundred twenty-eight, and amended by chapter eight hundred and twenty-four of the laws of nineteen hundred thirty, is hereby amended to read as follows:

§ 13. Divisions. There shall be in the executive department the following divisions:

1. The division of the budget.
2. The division of military and naval affairs.
3. The division of standards and purchase.
4. The division of state police.
5. The division of parole.
6. *The division of fine arts.*

The governor may establish, consolidate or abolish additional divisions and bureaus.

§ 2. Such chapter is hereby amended by inserting therein a new section, to be section nineteen, to read as follows:

§ 19. Division of fine arts. 1. The division of fine arts shall be administered by a fine arts commission of the state of New York, which shall consist of seven members, one painter, on sculptor, one architect, one landscape architect, one engineer and two lay members, who shall be appointed by the governor by and with the consent of the senate. The painter, sculptor, architect and landscape architect shall be appointed from lists of not less than three persons nominated for each position by the fine arts federation of New York. The engineer shall be appointed from a list of not less than three persons nominated for the position by the United Engineering Society, Incorporated, of New York city. The lay members shall be appointed from a list of not less than three persons nominated for the position by the state board of regents. Of the members of the commission first appointed two shall be appointed for a term of two years, two for a term of four years, and three for a term of six years. Members of the commission thereafter appointed, upon expiration of term, shall be appointed by the governor in the same manner, for a full term of six years. An appointment to fill a vacancy shall be for the unexpired term, and shall be made by the governor in the same manner as the original appointment.

2. The commission shall elect from its members a chairman and a vice-chairman, whose terms of officer shall be for one year and until their respective successors shall be elected and have qualified. The commission shall have power to adopt its own rules of procedure, and to prescribe regulations for

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the submission to it of all matters within its jurisdiction. Four members of the commission shall constitute a quorum. Action by the commission shall be a majority of the members attending a meeting. The members of the commission shall serve without compensation as such members, but shall be entitled to necessary traveling and other expenses, within or without the state, incurred in the discharge of their duties.

3. The commission shall appoint and at pleasure remove a secretary to the commission and a stenographer. The secretary shall receive a salary not in excess of four thousand dollars per annum.

4. As used in this article, the term "work of art" shall include all paintings, mural decorations, stained glass, sculptures, bas-reliefs, fountains, monuments, arches, gateways, and other structures of a permanent nature intended for ornamentation or commemoration. The terms "building" and "structures" shall respectively include all other buildings or structures. The term "landscape work" shall include the treatment of parks and of sites of and approaches to and surroundings of building and other structures.

5. Hereafter no work of art shall become the property of the state by purchase, gift or otherwise, or be paid for either wholly or in part out of state funds, unless such work of art or the design for the same, together with a statement of the proposed location of such work of art, shall first have been submitted to and reported upon by the commission; nor until so reported upon shall any work of art be erected or placed in or upon or allowed over or upon any state building or structure, street, highway, park, waters, or other public ground or place belonging to or under the control of the state. No work of art belonging to or in possession of the state shall be removed, relocated or altered in any way without the approval of the commission.

6. Hereafter the construction or erection of any building, bridge, or their approaches, arch, gate, fence or other structure or fixture, or any landscape work which is to be paid for either wholly or in part by state funds, or is to be constructed or erected on or over land or waters owned or controlled by the state, shall not be begun unless the design for the same and its location shall have been submitted to and reported upon by the commission; but the commission shall have power to waive such submission;

7. Hereafter no arch, bridge, viaduct, approach or other structure belonging to any private individual or corporation or public service corporation shall be permitted to extend over or under, into or upon any street, highway, waterway or other public place belonging to or under control of the state, unless the design and location thereof shall have been submitted to and reported upon by the commission.

8. It shall be the duty of each officer of the state

(Continued on Page 22)

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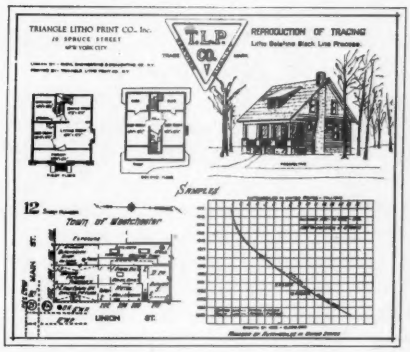

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LEGISLATION

(Continued from Page 21)

charged by law with the responsibility for the purchase, acquisition, placement, erection or execution of any work of art, monument, landscape work, building, bridge or other structure, coming within the jurisdiction of the commission, in each case, to submit the designs, drawings, models and other information, as may be deemed necessary by the commission, together with explanatory statements, to the commission for its action.

9. If the commission shall fail to decide upon any matter submitted to it within thirty-five days after final submission of the documents, the submission may be deemed terminated and the commission's approval of the matter may be presumed. The commission shall report to the governor and to the state department making the request.

10. The commission may advise generally upon questions of art, landscape work or architecture when requested to do so by the governor, any legislative committee, head of a state department or commission.

11. On or before the first day of February in each year the commission shall make a report to the governor and the legislature.

§ 3. The powers, duties and functions of the department of public works with respect to the matters to which section twenty-nine of the public works law relates shall terminate, and all powers and duties with respect to such matters, so far as the continuance thereof is consistent herewith, are transferred to and shall devolve upon the division of fine arts created in the executive department. The provisions of section two hundred and twenty-two of the state departments law is hereby superseded in so far as such section might be construed to vest in the department of public works after this act takes effect, any of the powers, duties and functions of the former bureau of fine arts.

§ 4. Article two-b of chapter forty-eight of the laws of nineteen hundred nine, entitled "An act relating to public buildings, constituting chapter forty-four of the consolidated laws," as added by chapter two hundred and twenty-eight of the laws of nineteen hundred twenty-four, as amended, is hereby repealed.

§ 5. There is hereby appropriated from any moneys in the state treasury not otherwise appropriated the sum of ten thousand dollars ($10,000), or so much thereof as may be necessary, for the purpose of defraying the expenses of the fine arts commission, for personal service, and for the payment of traveling expenses, within or without the state, and otherwise in carrying into effect the provisions of section nineteen of the executive law, as added by this act. Such moneys shall be payable from the treasury on the audit and warrant of the comptroller on the certificate of the chairman of the fine arts commission.

§ 6. This act shall take effect immediately.

EXPLANATION—Matter in *italics* is new, matter in brackets [ ] is old law to be omitted.

Any attempt to enumerate the activities or to name the persons who gave freely of their time, their ability and their finances to support the legislation sponsored by the Society would surely involve the editor and the publication as a complete recountal would include every chapter and practically every engineering society, as well as individual members thereof, in the State of New York, and perhaps even then some one would be unintentionally omitted. However, mention must be made of, and congratulations and expressions of

(Continued on Page 23)

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THE ENGINEER—PAST AND FUTURE

(Continued from Page 19)

following terms:—"I feel like a little school boy gathering pebbles upon the seashore, occasionally finding one more smooth than another, whilst all the while the vast ocean of knowledge lies unexplored before me."

Let us bear in mind that man is a mere instrument for carrying out the designs of the Great Ruler of the universe. Let him avoid the vanity resulting from his accomplishments. He is but a pawn in the universal scheme and as impotent with regard to self sufficiency as a new born babe. He can accomplish nothing without the approval of "the Divinity that shapes our ends rough hew them how we will." Let us remember that

"We are but forders in the stream of time
Spending whole decades vainly feeling for
A sober stone ere we put forth the foot
Each clicking of the clock announces change
But only centuries record advance." (F. J. S.)

At all times and in all climes it has ever been patent that man proposes but God disposes; and humanity, particularly the scientist and engineer, can best justify its existence by honest endeavor tempered with a humility born of the realization that man is cognizant of but a smattering of the laws ordained by the great Engineer from Whom emanated creation and Who holds in the hollow of His hand the destiny of the universe.

RADIO CITY

(Continued from Page 6)

gineer as his captain and let him set the course?

In an earlier day there was little doubt over the decision. For the architects of our great renaissance in the '80s and '90s the engineer was essentially a subordinate. His status was touched upon with the reserve characteristic of the period by Russell Sturgis when he compiled his "Dictionary of Architecture" thirty years ago. The term "architectural engineering," he noted, was in common use, but, he added, "it has been used to signify especially the pursuit of those who offer advice and, as it is called, 'consultation.'" A master like McKim had an adept in steel cage construction in his office, and if he needed any further aid he got it as he got that of a sanitary engineer, a tiling expert or any other technical authority. Only it was *his* genius that was stamped upon such a building, say, as the Pennsylvania Station.

And still the problem remained in the air, as these words of Sturgis's clearly showed:

"Some, but not many, modern architects are themselves competent and, up to a certain point, may trust their own computations. Some, but not many, engineers have something of that traditional respect for beauty and significance of form and they may make their own designs for the decorative effect of structures which they have to carry out. A great majority of either profession are men who are greatly in need of the aid of those of the other profession, and what the outcome will be is at present entirely uncertain."

That was published in 1901. The outcome in 1931, as Radio City only too sadly discloses, is hardly uncertain. On the contrary, there and elsewhere the spirit of the engineer is exerting tremendous pressure upon the architectural art. Mathematics is usurping the place of esthetics. Beauty gives way to the speeding up of business facilities. The architect is nominally at the wheel, but in a certain sense he abdicates his function, pleading utility as his excuse, when he does not dogmatically retort that perfect utility is beautiful anyway. Is this inevitable? We do not think so and we would offer two such diverse designs as the Woolworth Building and the Empire State Building in disproof.

We doff our hat to the engineer. When he can turn out as beautiful a thing as the Camden Bridge we know that he can be an artist. Nevertheless, he is not the man to determine the evolution of American architecture. The genius of the American architect can surely yet pull a Radio City through, if he stays an artist.

The above editorial speaks for itself. The engineer can navigate a course 1200 feet in the air; the architect cannot. As for the argument, it lacks the elements of a syllogism. Its conclusion finds no warrant in what precedes. What is architecture? Who is more essential to the consummation of the project—an engineer or an artist? Individually no one can accomplish it, although its form may be unsatisfactory. The other cannot go very far beyond the picture stage. The architect may be, and oft times is, an artist. The field, however, comprehends planning, sculpturing, landscaping, interior decorating, furniture creating and other phases of architecture. The architect sometimes is what might be termed an architectural engineer, and occasionally a practising professional engineer. The architect or engineer who can produce a satisfactory Radio City must unquestionably be an artist, but such artistry must needs be a combination of architectural and engineering skill. The architect must be one who excels in his knowledge of engineering rather than in the fine arts and the engineer must be one whose appreciation of aesthetics is as thorough as his knowledge of science.

Both professions must contribute to the creation of a worthwhile city.

LEGISLATION

(Continued from Page 22)

appreciation extended to, Senator Desmond who sponsored, Chairman Chapman who directed and President Steinman who debated the legislation and succeeded in bringing a united profession to its support.

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ENGINEERS AND BUILDING DESIGN

(Continued from Page 13)

29. Calculation of stresses, strains and sections is clearly engineering. It is the major part of the engineer's training.

30. Registered architects have admitted under oath that they know nothing of essential elements of building design. They depend on engineers to do it for them.

31. Architects have no monopoly on planning and coordinating. All large bridges, subways, canals, aqueducts, power projects, etc., are directed by engineers. A building is a much simpler proposition to an engineer.

32. Engineers can and do hire architects just as well as architects can hire engineers.

33. As to the supervision of construction of buildings, the engineer is unquestionably more of a constructor than is the architect.

34. The Tenement House Commissioner of New York City certifies under oath that the filing of plans for multiple dwellings by engineers has been most satisfactory, and that the public interest is best served by dealing directly with the engineer.

35. Superintendents of Building Departments in New York City and plan examiners testify that plans filed by engineers are more satisfactory than those filed by architects.

36. Superintendents in charge of examination of plans in various cities throughout the state recommend the passage of legislation enabling engineers to prepare and file building plans.

37. Buildings intended for use as power plants, manufacturing laboratories and various commercial uses justify mechanical, electrical or chemical engineers as principals.

38. Alterations and installations, pertaining to heating, refrigeration, ventilation, water supply, sanitation, fire prevention and protection, mechanical equipment, elevator systems and various other details of existing buildings call for mechanical, electrical or chemical experts as the case may warrant. To require the services of an architect, who must in turn retain such experts, is unfair to the owner who pays the costs. Every engineer is as capable of acting as a principal as is every type of architect, who, regardless of specialization demands the right to act as principal.

39. The engineer's code of practice and ethics is at least on par with that of architects.

40. The practices of engineers are as ethical as those of any profession.

From Brief of D. B. Steinman, Pres. of N. Y. State Society; Vice Chairman, Board of Licensing for Professional Engineers.

The above is not a criticism of architects but an answer to their contentions concerning the engineer and to the arguments presented by them to legislative and official groups.

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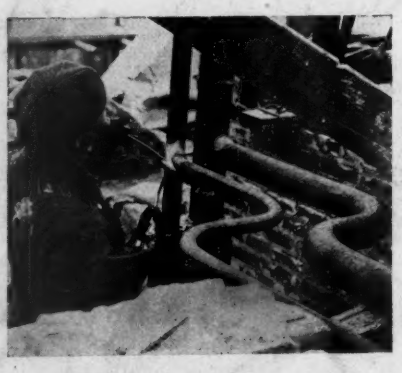

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